(54) Title: VIRTUAL DATA CENTER THAT ALLOCATES AND MANAGES SYSTEM RESOURCES ACROSS MULTIPLE
NODES

Data Center / Eclipta Node
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Data Center / Eclipta Node
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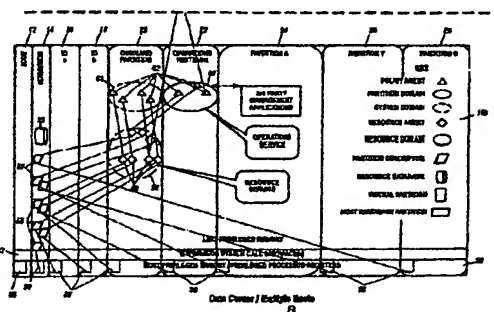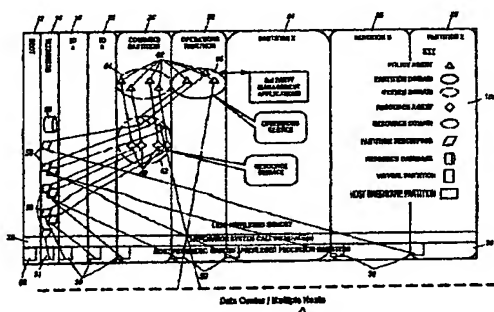
(57) Abstract: A virtualization infrastructure that allows multiple
guest partitions to run within a host hardware partition. The host
system is divided into distinct logical or virtual partitions and
special ~infrastructure partitions are implemented to control resource
management and to control physical I/0 device drivers that are, in
turn, used by operating systems in other distinct logical or virtual guest
partitions. Host hardware resource management runs as a tracking
application in a resource management "ultravisor" partition, while
host resource management decisions are performed in a higher level
command partition based on policies maintained in a separate operations
partition. The conventional hypervisor is reduced to a context switching
and containment element (monitor) for the respective partitions, while
the system resource management functionality is implemented in
the ultravisor partition. The ultravisor partition maintains the master
in-memory database of the hardware resource allocations and serves
a command channel to accept transactional requests for assignment of
resources to partitions. It also provides individual read-only views of
individual partitions to the associated partition monitors. Host hardware
I/0 management is implemented in special redundant PO partitions.
Operating systems in other logical or virtual partitions communicate
with the I/0 partitions via memory channels established by the ultravisor
partition. The guest operating systems in the respective logical or virtual
partitions are modified to access monitors that implement a system
call interface through which the ultravisor, I/0, and any other special
infrastructure partitions may initiate communications with each other
and with the respective guest partitions. The guest operating systems
are modified so that they do not attempt to use the "broken" instructions in the x86 system that complete virtualization systems must
resolve by inserting traps. System resources are separated into zones that are managed by a separate partition containing resource
management policies that may be implemented across nodes to implement a virtual data center.

FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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